

Influence of Social Media Communication on Circular Economy Awareness and Engagement among users in Imo State

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Abstract

This study assessed influence of social media specifically Facebook and TikTok communication on circular economy awareness and engagement among users in Imo State. The specific objectives include; to determine the level of exposure to the circular economy concepts on social media platforms; ascertain the level of knowledge among users; examine influence of social media communication on users' awareness and engagement in CE; and identify factors that affect users' practice of CE. The study was anchored on the theory of technological determinism. The mixed-method consisting of the survey and the in-depth interview methods was adopted to study residents in Imo state with estimated population of 5,766,234. Sample size of 384 was derived using Krejcie and Morgan sample size table for the survey. While a sample size of 9 respondents for the in-depth interview was formed based on saturation principle. A multi-stage sampling approach guided the selection of participants for the study. A structured questionnaire and interview guide were the instruments for data collection. Data analysis involved descriptive statistics and thematic analysis. Finding revealed that majority (51%) of the respondents use facebook and TikTok several times everyday. Moderate level of exposure to CE principles was observed. Majority (55%) of the respondents understand that circular economy model promotes waste reduction and effective materials management. 51% and 50% rejected that their awareness and engagement in CE are linked to Facebook and TikTok messages. Majority (79%) of Respondent affirmed that significant barriers, including insufficient knowledge and inadequate enabling facilities (51%) hinder CE implementation. The researchers recommended among others for collaboration among environmental agencies, the academia and social media stakeholders toward improving CE knowledge and engagement.

Keywords:

Awareness, Circular Economy, Engagement, Social Media Communication, Waste Management

1. Background to the Study

The degradation of the environment arising from persistent resource depletion and poor waste management systems directly compromises ecological resilience, causing loss of biodiversity and undermining sustainable development goals. In response, the circular economy (CE) has emerged as a sustainable economic model that promotes resource regeneration through principles such as reducing, reusing, recycling, refurbishing, remanufacturing, recovering, and regenerating materials. By extending product lifecycles and minimizing waste, CE offers a viable alternative to the dominant linear “take–make–dispose” model. In Nigeria, including Imo State, sectors with high CE potential include food systems and organic waste, e-waste, plastics, textiles, bio-waste, and the built environment (UNEP, 2022). However, continued reliance on linear systems has intensified environmental and public health risks, with waste mismanagement contributing to pollution-related diseases and premature deaths (Barbhuiya et al., 2024; Turner-Bailes, 2021). Emissions from landfills, open burning, and liquid waste are expected to increase under current practices (Oo et al., 2024; FME, 2021).

Despite its potential, CE implementation in developing countries' contexts remains constrained by limited awareness, inadequate knowledge, and weak governance structures (Onungwe, 2023; Ezeudu & Ezeudu, 2019). More so, scholars have emphasised that effective information dissemination is critical for enabling collective action toward Circular Economy (CE) adoption (Esposito et al., 2023). Digitalisation, particularly through social media platforms, provides a strategic channel for communicating CE principles, shaping public attitudes, and fostering engagement (L’Abate, 2023; Esposito et al., 2021). However, this potential is often challenged by the pervasive threat of information disorder on social media platforms.

Furthermore, empirical evidence regarding circular economy (CE) communication via social media within the Nigerian context remains limited. This study addresses this critical literature gap by investigating the contributions of Facebook and TikTok communication toward fostering CE awareness and engagement among users in Imo State. The outcome of the study will add to the body of existing knowledge and contribute to global discourse on circularity system. It will inform policy development in Nigeria and pave way for further research in various disciplines.

Statement of the problem

Globally, approximately 9 million people die annually from diseases linked to poor waste and pollutant management (Turner-Bailes, 2021). In developing countries, Tearfund (2019) estimates that between 400,000 and 1 million people die each year due to health issues caused by waste mismanagement (Mitchell, 2023). Waste dumps and landfills contribute to greenhouse gas emissions and attract disease-carrying rodents and insects. They also block drainage systems, causing flooding and creating breeding grounds for diseases such as cholera, diarrhea, malaria, and typhoid. Waste mismanagement is a key driver of global warming, climate change, biodiversity loss, pollution, and other environmental and health challenges (UNEP, 2024).

Moreover, adoption of circular economy (CE) practices in developing countries, including Nigeria and Imo State, has remained hindered by insufficient expert knowledge and a lack of effective information dissemination (Ezeudu, 2019; Rajput et al.(2020). Although social media holds significant potential for spreading innovative ideas and influencing behavior, uncertainty remains about their influence in raising CE awareness and fostering meaningful engagement among users. Therefore this study sought to assess influence of social media communications on awareness and engagement with circular economy practices, with a focus on users in Imo State.

Objectives of the Study

The aim of the study is to assess influence of social media communication on circular economy level of awareness and extent of engagement among users in Imo State.

The specific objectives that guided the research include to;

1. determine the extent of exposure of Imo social media users to CE messages.
2. ascertain social media users level of knowledge on CE concepts among users in Imo state.

3. examine influence of social media platforms' messages on Imo users awareness and engagement in CE .
4. identify factors that affect engagement in CE principles and practices among social media users in Imo state.

2. Literature

Circular Economy, Waste Management, and Sustainable Environment

Studies have shown that Circular Economy (CE) principles such as reduce, reuse, recycle, repair, refurbish, and remanufacture drive sustainable waste management through waste valorization, composting, material recovery, and waste-to-wealth initiatives (Slunge et al., 2021; Solomon et al., 2024; EEA, 2024). Operationalising CE reduces landfill reliance, open burning, and methane emissions (Oo et al., 2024), improving ecosystem quality, healthy environment, public health, and job creation while advancing 2030–2050 zero-waste and net-zero targets (UNEP, 2024). In developing contexts like Nigeria including Imo State, CE operations largely rely on the informal sector, involving scavengers, artisans, and small recovery enterprises (Rajput et al., 2020) which highlight a critical avenue where social media communication can foster structured awareness and engagement.

Empirical Studies

Guzman-Revera (2023) analysed circular economy (CE) discourse on X formerTwitter from 2015–2022 using sentiment analysis and keyword tracking of 513,709 tweets. Key themes such as sustainability, recycling, and innovation showed fluctuating prominence, while overall sentiment remained largely neutral with a gradual shift towards positivity. The study revealed inconsistent attention to the 3Rs.

Similarly, L'Abate et al.(2023) did an empirical analysis of the social media for circular economy disclosure through the twitter. Results indicated that the both profitable and indebted companies disclose a substantial amount of circular economy information through their official Twitter accounts. Relatedly, Chilote (2025) utilised a mixed-methods approach to investigate sustainable plastic waste management in Nigeria, through stakeholder engagement at the University of Nigeria, Nsukka (UNN). Empirical findings identified visible litter (68.2%) and canal blockage (65.0%) as the primary perceived consequences of plastic pollution, while identifying social media (48.3%) and formal education (23.3%) as the most effective channels for public sensitisation. A localized implementation framework that adapts the Norwegian Deposit Return Scheme (DRS) to the Nigerian socio-economic context was developed.

In another study, Xie et al. (2025) examined the role of social media based re-commerce groups in post- consumption networks within the circular economy across 20 countries. Using grounded theory and mixed methods. The results revealed key factors shaping re- commerce activities on Facebook and confirmed the platform's role as an enabler of circular economy practices.

Furthermore, Antikainen, et al. (2018) Conducted an exploratory qualitative study to clarify the perspectives on the challenges of circular economy that hinder implementation of digital technology-aided circular business models. The virtualisation of products and processes, partnership with stakeholders and use of digitalisation were found to be pivotal in adopting CE-based business models. Also, Björklund et al. (2024) assessed the sustainability potential of digital platforms facilitating the circularity of household items within closed-loop supply chains. Analysis of three furniture and household item platforms showed that sustainability outcomes depend on system design, scale, actor engagement, usage patterns, geographic scope, and logistics solutions.

More so, Esposito et al. (2023) analysed the role of social media in supporting circular economy transition in the agri-food sector from a dialogic perspective. Using a 4R (reduce, reuse, recycle, recover) coding framework, the study found that European agri-food companies primarily used Twitter to share informative content, with a strong emphasis on recycling and general CE themes.

Finally, Pasqualotto et al. (2023) conducted a systematic literature review to identify and categorise drivers and barriers to circular economy (CE) adoption. Content analysis of 53 selected studies revealed ten key categories; environmental, supply chain, economic, informational, legal, market, organisational, public, social, and technological.

Theoretical Framework

Technological Determinism

This research is anchored on the theory of technological determinism. It was introduced by Thorstein Veblen in 1857. The term "technological determinism" refers to the view that technology ultimately determines historical outcomes, as stated by Smith (1994) and mentioned by Drew (2022). The theory allows us to track how we went from an orally transmitted culture to a written one, and from there to the mass media of radio, television, and print, and finally to the information age of computers and the internet. Technological determinism is relevant to this study because it provides a strong framework for examining social media as a driver of CE awareness and engagement, highlighting how communication technologies can influence societal responses to environmental sustainability initiatives in Imo State.

3. Methods

The study employed a mixed-methods design to examine the influence of social media communication on awareness and engagement in the circular economy model. Quantitative data were collected through a survey, while qualitative insights were obtained via in-depth interviews.

The target population comprised residents of Imo State with a estimated population of 5,766,234; (Nigerian Investment Promotion Commission, 2025). The Survey sample size of 384 was derived using the Krejcie and Morgan sample size table, while nine (9) interview participants were selected based on data saturation.

A multi-stage sampling approach was adopted. First, Facebook and TikTok were purposively selected. Secondly, three public tertiary institutions including; Federal University of Technology, Owerri, Imo State University, Owerri, and Federal Polytechnic Nekede, Owerri, were also purposively selected. Thirdly, schools/faculties of Environmental Studies, Agriculture, Sciences, Engineering, Business/Management, and Information, Communication Technology and media studies were selected due to their relevance to sustainability and circular economy issues. Fourthly, participants were selected using convenience and snowball sampling techniques, with participation restricted to students at 300 level and above.

Quantitative data were collected using a structured questionnaire, which underwent expert validation to ensure content validity. Qualitative data were collected using semi-structured interviews. The survey instrument was designed using google forms. Both instruments were administered via WhatsApp group and individual chats. Quantitative data were analysed using descriptive while qualitative data were analysed thematically.

4. Result

Based on 60% response rate, 640 copies of questionnaire were distributed enabling the first set of the actual sample size 384 to be retrieved for data analysis.

Table 1 Sex

Option	Frequency	Percentage
Male	161	42%
Female	223	58
Total	384	100%

Source: Online Survey 2026

Out of the total sample size of N = 384, the majority of the respondents are female, accounting for 58% of the population.

Social Media Usage

Table 2 Frequency of Facebook and TikTok Usage.

Option	Frequency	Percentage
Several times daily	195	51%
Once daily	63	16%
A few times in a week	31	8%
A few times in a month	8	2%
At any time I feel	87	23%
Total	384	100%

Source: Online Survey 2026

Analysis of findings in table 1 revealed that majority (51%) of the respondents use facebook and TikTok respectively several times daily. The implication is that most of them are active users of social network sites.

Table 3 Circular Economy Messages that Users are mostly Exposed to on Facebook and TikTok Platforms

Option	Frequency	Percentage
Reuse, Recycle, repair	107	27%
Rent, Refurbish and Remanufacture	83	22%
Sustainable Production and Consumption	38	10%
Waste Management and Eco friendliness	81	21%
Product-as-a-service models	53	14%
Others (Please mention)	22	6%
Total	384	100%

Source: Online Survey 2026

Findings as analysed in table 2 indicates that the majority (27%) are mostly exposed to reuse, recycle and repair. This implies that only an insignificant majority are aware of some circular economy concepts.

Table 4 How Often Respondents are Exposed to Circular Economy-related concepts including Reuse, Repair, Recycle Messages on Facebook and TikTok Platforms.

Option	Frequency	Percentage
Very often	58	15%
Often	89	23%
Not often	168	44%
Not very often	69	18%
Total	384	100%

Source: Online Survey, 2026

Data presented in table 4 shows that the majority (44%) of the respondents occasionally come across circular economy related messages on Facebook and TikTok platforms.

Table 5 Respondents understanding that circular economy model promotes waste reduction and effective materials management.

Option	Frequency	Percentage
Strongly agree	89	24%
Agree	211	55%
Disagree	73	19%
Strongly agree	11	3%
Total	384	100%

Source: Online Survey, 2026

Data analysis in table 5 shows that 55% of the respondents understand that CE model promotes waste reduction and effective material management.

6. Respondents knowledge that circular economy model promotes clean and healthy environment.

Option	Frequency	Percentage
Strongly agree	68	18%
Agree	107	28%
Disagree	149	39%
Strongly disagree	60	15%
Total	384	100%

Source: Online Survey, 2026

Findings in table 6 reveals that 39% understand that circular economy model promotes clean and healthy environment.

Table 7 Awareness that Circular Economy System Supports Resource Regeneration, Clean and Healthy Environment as a Result of Exposure to CE Messages on Facebook and TikTok Platforms.

Option	Frequency	Percentage
Strongly Agree	46	38%
Agree	27	7%
Disagree	196	51%
Strongly Disagree	115	4%
Total	384	100%

Source: Online Survey, 2026

From data analysis presented in table 7 majority (51%) rejected the idea that their knowledge of the benefits of CE is as a result of their exposure to information on Facebook and TikTok.

Table 8 Facebook and TikTok Informing Respondents' Engagement in the Reuse Repair, Refurbish, Rent Recycle of Products.

Option	Frequency	Percentage
Strongly agree	97	25%
Agree	93	24%
Disagree	191	50%
Strongly disagree	3	1%
Total	384	100%

Source: Online Survey, 2026

Result in table 8 indicated that 50% Representing the majority rejected the assertion that messages received on Facebook and TikTok motivated their involvement in reuse, refurbish, recycle among others CE Practices.

Table 9 Willingness to Promote CE principles and Practices through ones Posts on Facebook and TikTok Platforms

Option	Frequency	Percentage
Strongly Agree	121	31%
Agree	183	48%
Disagree	47	12%
Strongly Disagree	33	9%
Total	384	100%

Source: Online Survey, 2026

Finding as analysed in table 9 shows that the majority (48%) admitted their readiness to promote CE principles and practices through posts or content creating on Facebook and TikTok.

Table 10 Lack of knowledge as a Hindrance to Engagement in CE Practices.

Option	Frequency	Percentage
Strongly Agree	139	36%
Agree	164	43%
Disagree	58	15%
Strongly Disagree	23	6%
Total	384	100%

Source: Online Survey, 2026

The finding in table 10 depicts that lack of knowledge is a barrier to engagement in CE practices as reported by the majority (43%) of respondents.

Table 11 Lack of facilities that Motivate Engagement in recycling, repairing, refurbishing and other Circular Economy Practices in my Community.

Option	Frequency	Percentage
Strongly Agree	137	36%
Agree	196	51%
Disagree	36	9%
Strongly Disagree	15	4%
Total	384	100%

Source: Online Survey, 2026.

Analysis of finding in table 11 revealed that 51% representing the majority of the respondents accepted that the facilities that encourages CE practices are lacking.

Qualitative Result

Theme 1: Exposure to Circular Economy Messages on Social Media

Participants reported encountering related content on Facebook and TikTok. Exposure included informal waste recovery activities, educational content explaining plastic recycling processes; and demonstrations of formal recycling practices by factory agents.

Theme 2: Knowledge of Circular Economy Principles

Findings revealed a moderate level of knowledge of circular economy principles. Participants demonstrated awareness of recycling, repairing, and waste reduction as important elements of the circular economy. However, participants reported limited understanding of how circular economy practices affect raw material resource flows.

Theme 3: Engagement in Circular Economy Practices

Participants reported repairing personal belongings to extend their usability and redistributing functional items to others rather than discarding them which implies active engagement at individual level.

Theme 4: Factors Affecting Circular Economy Practice

Participants reported both attitudinal and structural barriers influencing their practices. One factor was preference for new products, as some participants indicated reluctance to collect or use second-hand items, opting instead to purchase new goods from marketers. recycling or recovery facilities were not easily accessible.

5. Discussion of Findings

Exposure to CE Concepts on Social Media

Findings show that 51% of respondents use Facebook and TikTok several times daily, with greatest exposure to reuse, recycle, and repair (27%), followed by rent, refurbish, and remanufacture (22%). Although 44% reported infrequent exposure to circular economy (CE) messages, the qualitative responses confirmed access to CE-related messages, indicating an overall moderate level of exposure. These results support Guzman-Revera (2023) on uneven attention to CE concepts on social media, while aligning with L'Abate et al. (2023) and Esposito et al. (2023), who found that organisations use social platforms to disseminate CE information and raise awareness

Knowledge Level on CE Principles

Results show that 55% of respondents associate the circular economy (CE) with waste reduction and efficient material management, while 39% link it to a clean and healthy environment. This suggests that Facebook and TikTok users in Imo State have moderate understanding of core CE principles. The result gives credence to the moderate level of exposure indicated earlier. The implication is that the awareness level leaves learning at a surface level rather than building a practical engagement tendency. The finding is consistent with Björklund et al. (2024) on the role of platform usage in knowledge diffusion, this is supported by the qualitative data. The results align with Xie et al. (2025) and Chilote (2025), who identified social media as an effective enabler of re-commerce and

environmental awareness. The findings contradict Esposito et al. (2023) finding that CE interactive engagement on social media remained limited. The findings support Technological Determinism, demonstrating that digital platforms act as drivers of environmental behavioural change through improved access to CE knowledge.

Influence of Social Media on CE Awareness and Engagement

Findings indicate that most respondents did not link knowledge of circular economy (CE) to exposure on Facebook and TikTok, with 51% rejecting this link and 50% reporting low motivation to engage in CE practices by Facebook and TikTok messages. Moreover, qualitative data suggest that CE engagement occurs as part of everyday experience. The implication of these findings is that TikTok and Facebook campaigns fail to inspire action as Imo State residents naturally practice reuse and recycling through daily economic necessity instead of digital influence. The results contradict Antikainen et al. (2018) and Xie et al. (2025), who identified digitalisation and virtualisation as key enablers of CE adoption. From a technological determinism perspective, the findings challenge the assumption that digital platforms automatically drive awareness and behavioural change towards new economic models.

Factors that Affect Engagement in CE

Results show moderate (48%) willingness to promote circular economy (CE) practices through social media, alongside significant barriers, notably limited knowledge by the majority (79%) of the respondents and lack of enabling facilities as reported by 51%. These findings corroborate prior studies identifying information deficits, limited expertise, and infrastructural constraints as major obstacles to CE adoption in developing countries' contexts (Pasqualotto et al., 2023; Onungwe, 2023; Ezeudu, 2019; Turner-Bailes, 2021; Rajput et al., 2020; Suleiman, 2023; Björklund et al., 2024). Qualitative evidence further highlights the combined influence of attitudinal and structural barriers. From a technological determinism perspective, social media is recognized as a potential driver of change, yet its effectiveness remains constrained by persistent cognitive and material limitations.

Recommendations

Based on the findings of the study the following recommendations were made;

1. Social media content creators and influencers on economic and environmental issues should improve information dissemination on all aspects of circular economy model on facebook, Tiktok and other social media platforms.
2. Facebook and TikTok users should minimise their interest in entertainment posts and endeavour to promote knowledge on development-oriented contents such as environmental education and sustainability.
3. Collaboration among environmental agencies, academia, and social media stakeholders has become critical to promoting CE knowledge and practice.
4. Government should invest on the enabling infrastructures required for circularity practices including material marketplace platforms, reusable packaging washing and distribution centers, Bio-Refinery hubs like facilities that convert organic waste, agricultural residues, and food scraps into plastics, biochemicals, or nutrient-rich organic fertilizers among others.

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Supplementary Information

CRedit Authorship Contribution Statement

Igbokwe, Basilia Nkemdilim: Conceptualisation, Methodology, Instrument Design.

Ejiogu, Felicia Ijeoma: Conceptualisation, Draft Preparation, Literature Review, Editing, Supervision.

Obuseh, Raphael: Literature Review, Data Analysis, Discussion of findings,

Consent; Participation in the research was entirely voluntary, and informed consent was obtained from all participants.

Declaration of Competing Interest

The authors declare that they have no competing interests that could have influenced the work reported in this paper.

Data Availability

The data supporting the findings of this study are available from the authors upon reasonable request.

acknowledgements

The authors gratefully acknowledge the Tertiary Education Trust Fund (TETFund) for sponsoring this research through the Institutional Based Research (IBR) grant. We also extend our sincere appreciation to the management of the Federal Polytechnic Nekede, Owerri, Imo State for the administrative approval and invaluable support throughout the period of this research project.